[Version 1.2]
Michael Burns

[Signature User Manual]

This document will introduce you to the wonders of the Mallincam Signature Camera. It will include instructions on how to connect the Signature to your computer along with explanations of the camera's various settings. Imaging techniques with the various hardware and software options will be covered. Both the standard CVBS video output and SDI video output will be discussed along with hints and suggestions on how to resolve any problems that you encounter with this camera. Enjoy the adventure with Rock Mallin's professional SDI video camera, this his Signature masterpiece.

Revision History

Version	Date	Revision Description
1.0	3/22/2014	Template Creation
1.1	3/23/2014	Typo's
1.2	3/24/2014	Added Appendix F specifically for RS485 Adapters

Table of Contents

Contents

Revision History ii

Table of Contents *0*

1. Introduction *3*

The Contents of the Signature Package 3

You purchase will include the following items: 3

The Camera (Just the Facts) 4

The Camera (its Anatomy) 5

The Camera (Connection Diagram) 7

The Camera (RS-485 Connection) 7

Hooking up Hardware 8

Software 9

2. Overview *9*

Functional Description 9

HD-SDI 10

CVBS 11

3. Instructions *13*

Connecting Signature to Computer (CVBS) 13

Connecting Signature to Computer (HD-SDI) 14

Controlling Signature using the Buttons 15

Using “Signature with Buttons” Software 19

Requirements: 19

Procedure 20

Using “Signature Application Software” 24

4. Reference *28*

Appendix A – OSD Menu 28
LUMINANCE MENU1 (1/4) 28
ALC 28
AES 28
FIX SHUTTER 29
PEAK AVERAGE 29
BACK LIGHT 29
XDR 30
GAMMA 30
LUMINANCE MENU2 (2/4) 30
AGC 31
SLOW SHUTTER 31
DNR 31
DAY/NIGHT 31
FOG REDUCTION 32
ECLIPSE 32
ENHANCE 32
COLOR MENU (3/4) 33
COLOR MODE 33
WHITE BALANCE 33
UV MATRIX 34
COLOR GAIN 34
COLOR TONE 34
SETUP MENU (4/4) 35
LANGUAGE 35
TITLE 35
DEFAULT 35
SPECIAL FUNCTIONS (1/2) 36
PRIORITY 36
MOTION DETECT 36
DIGITAL ZOOM 36
H/V REVERSE 36
DISPLAY MODE 37
SPECIAL FUNCTIONS (1/2) 37
PRIVACY MASK 37
CROSS LINE 37
FREEZE 38
POSI/NEGA 38
COMM ID 38

Appendix B – Special Button Power Sequences 39

Appendix C – Trouble Shooting Procedures 41
The Back LED doesn't light up 41
No Video Image from any output port 41
The OSD screen is frozen 41

Appendix D – Installing MCV 43

Appendix E – Installing Blackmagic UltraStudio 46
Requirements: 46
Procedure: 46
Getting SDI Video Images 49
Using other Software 51

Appendix F – RS485 Connection Options 53
US Converters RS485/422 cable converter Model Number XS890 53
Connecting Hardware 53
Installing Driver Software 54
US Converters RS232 -RS485 Converter Model Number XS201A 55
Connecting Hardware 55

Appendix G – Signature Setting Example Sheets 56

Appendix H – Notes 57

1. Introduction

Welcome to the world of the Mallincam Signature Camera. Your purchase will provide you with years of discovery and adventure as you view, record, share, and broadcast the wonders of the Solar System. The Signature is a professional video camera that can provide broadcast quality live images in the HD-SDI format along with standard quality video for non-broadcast needs. This document will guide you in the connection options of the Signature to your computer, along with recommendations on configuring the camera for specific Solar System objects. Many special thanks to Rock, Jack, Bob, Bryan, Shevill and others whose advice and techniques are incorporated in this manual. This manual is based on the RED LED version of a NTSC Signature Camera which also includes RS485 control capabilities.

The Contents of the Signature Package

You purchase will include the following items:

- Signature Camera in Box
- c-adapter to 1.25” eyepiece holder
- 120V AC to DC adapter
- 25ft dual cable power/video (BNC male /RCA male)
- Signature RS485 Port connector

These accessories will provide you with the ability to connect the Signature camera to your telescope, Power the Signature while connecting it to a 120V AC power source, and displaying your image on any device that accepts analog video via a RCA connection.

The Camera (Just the Facts)

The Mallincam Signature Camera is the ultimate Solar, Lunar, and Planetary Video Camera ever made. This scientific instrument contains the following specifications:

Image Sensor	sCMOS
CCD Pixels:	1384(H) by 1076(V) with 3.25 μ m Pixel size for a total of 1.49 Mega Pixels
CCD Size:	1/3“
Lux:	0.1
Video Output Format:	NTSC/PAL
Multi Format Video Output	Image Aspect: Full/Normal HDV: 16:9, SDV: 4:3/16:9 720p60, 1080p30,720p30,1080i60 720p50, 1080p25,720p25,1080i50
Analog Video Out	CVBS
Digital Video Out	HD-SDI
HD-SDI Bit Rate	1.485 GBits/sec
Gain Control:	Auto/Manual
Exposure Control:	Auto/Manual/Iris Priority
Auto Iris:	AES (Rolling Shutter), ALC
Fix Shutter (s)	1/30, 1/50, 1/100, 1/120, 1/180, 1/350, 1/500, 1/750, 1/1000, 1/2000, 1/4000, 1/10000
Slow Shutter (s)	1/15, 1/8, 1/4, 1/2, 1, 2, 4, 8
S/N Ratio:	48dB
Gamma Correction	0.45/0.7/1.0
Digital Zoom	4 times
Communication Protocol	RS484 (Red LED Version only)
Operating Temperature	-20^{o}C to 50^{o}C (-4^{o}F to 122^{o}F
Power Supply	12±1V DC at 3000mA

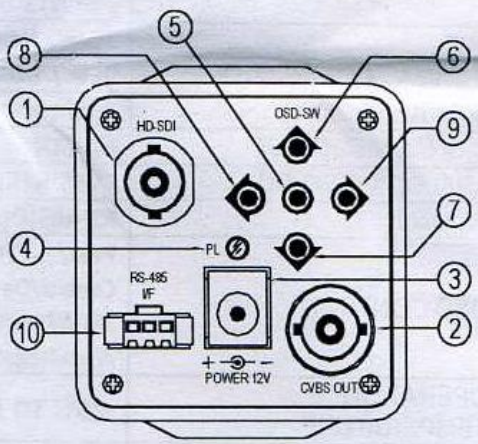
The Camera (its Anatomy)

The Signature camera is 4.5” x 2” x 2” and weighs in at about 1 lb

The Signature Camera also comes with comes with 120 Volts AC Power Supply, 1.25" Eyepiece Adapter, 25 foot Power / Video (analog) Combination Cable and RS485 connection cable.

The Camera (Connection Diagram)

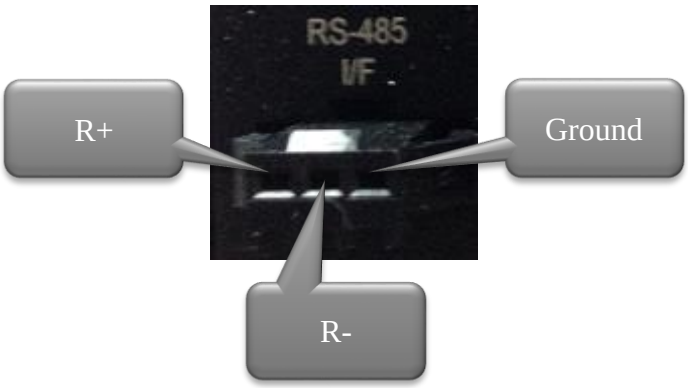
REAR PANEL	
1	HD-SDI OUT
2	CVBS VIDEO OUT
3	POWER IN DC-JACK
4	POWER ON INDEX LED
5	OSD-SW "ENTER"
6	OSD-SW "UP"
7	OSD-SW "DOWN"
8	OSD-SW "LEFT"
9	OSD-SW "RIGHT"
10	RS-485 I/F (Not have release)
IRIS CONNECTOR(DC-LENS)	
P1	DUMP-
P2	DUMP+
P3	DRIVE
P4	DRIVE



The Camera (RS-485 Connection)

The Signature communicates via a 3 pip RS485 port on the back of the camera

Note: Only the Red LED Version of the Signature has communication capabilities.



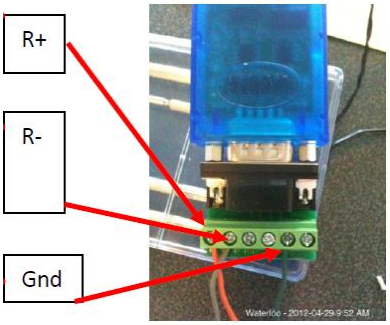
Hooking up Hardware

To control the camera through the Signature RS485 Port you will require a USB to RS485 Adapter Cable. I have had great success with the **US Converters RS485/422 cable converter Model XS890 (**other users also have had success with **US Converters RS485 to RS232 converter Model XS201A).**

See **Appendix F** for detailed instructions of how to attach the Signature Camera to Specific RS485 Adapters.

Your RS485 adapter must come with a means to connect it to the wires from the Mallincam **RS485 Port Connector**. You need to connect the Mallincam **RS485 Port Connector** to the back of the Signature Camera and then connect the three cables to the green thingy (this is the technical term we use in the industry) that came with your purchased "RS485 Adapter". Make sure you match the cables in the correct order.

RS485 Port Connector



US Converter RS485 Cable

After you have connected the pieces on your RS485 Cable and secured them together to insure the 3 wires from the Mallincam RS485 Port connector cannot come loose from the Green Thingy (I used electrical tape to wrap them together). All you should need to do next is plug the cable into a free USB Port on your computer. Windows should automatically download and install the correct drivers from internet that are needed to run the converter.

Software

There are two free programs that are available to you to use:

1. **Buttons Control with Protocol** –this program allows you to control the Signature by using the OSD menu just as if you are pressing the buttons on the back of the Signature (There is a non-protocol version of this program).

2. **Signature Application with Protocol**- this program provides menus that allow you to connect to and control most of the functions of the Signature by clicking on choices of moving sliders.

These Software programs are located in Folder named **Signature Camera Applications and Documentation**. The folder is located at **http://sdrv.ms/Lb3wV3**

See below in **Chapter 3** on how to install and use these two programs.

2. Overview

The Signature Camera was designed for imaging Solar System Objects. The Fixed Shutter ranges from 1/30s to 1/1000s which allows you to capture images of the bright Solar System objects (major planets, Sun and Moon). The Signature does provide a Slow Shutter capability that allows longer exposures from 1/15s to 8s to capture those dimmer objects. The Signature was not designed for Deep Sky Objects, but that is still not out of its capabilities with the end user's expertise.

Functional Description

The Signature provides two BNC video outputs ports. One is labelled HD-SDI which produces a true digital SDI output, while the other is labelled CVBS OUT and this produces an analog signal.

HD-SDI

Serial digital interface (SDI) is a family of digital video interfaces first standardized by SMPTE (The Society of Motion Picture and Television Engineers) and is used for broadcast-grade video. High-definition serial digital interface (HD-SDI), was also standardized in SMPTE; this provides a nominal data rate of 1.485 Gbit/s.

The display and capture of a HD-SDI signal requires the use of a specialized BNC ended cable that meets the SMPTE standards and a HD-SDI capture device.

A Google search can find various lengths of specific HD-SDI cable from many broadcasting vendors. I purchased mine form **Markertek.com**.

To capture or display the HD-SDI video signal requires the use of both a HD-SDI capture device and a very fast computer. Since the signal standard is about 1.5 Gbit/s the capture devices will either be an internal computer card, or a box that connects to the computer using either a USB 3.0 or Thunderbolt connection. One of the major players in this arena is a company called **Blackmagic**. They provide a variety of capture/display devices which will match your requirements.

For those of you need to just display the output on a HDMI monitor, **Sewell** provides a very inexpensive SDI-HDMI converter called the Spector that will do the job for you.

CVBS

The CVBS OUT BNC connector on the back of the Signature Camera produces an analog signal that can be captured by any analog capture device such as the **Mallincam MCV** video capture device. CVBS stands for **C**omposite **V**ideo, **B**lanking and **S**ync and is nothing more than the standard composite signal and thus requires the use of a composite video cable with a BNC male connector at one end and a RCA male connector at the other end. When you purchased the Signature camera, Rock will have provided you with a 25 foot Power/Video dual cable for you to use with the camera. The video portion of this cable is for the analog (CVBS) port on the back of the camera.

For those of you who want to display the analog signal from the Signature on a HDMI monitor, Mallincam provides an analog to HDMI upscaler.

This device Up-Scales Composite Video, S-Video, and HDMI to 720p/1080p (selectable) HDMI. It provides Motion Compensated 3D Wavelet Video Coding Technology is applied to make the converted picture rich in color and more vivid. Input video systems - NTSC and PAL is automatically detected and adjusted and it provides a built-in Time Base Correction (T.B.C) for signal synchronization.

3. Instructions

Connecting Signature to Computer (CVBS)

Requirements:

- Computer with video display software such as AMCAP
- USB Video capture adapter such as Mallincam MCV
- Mallincam dual power/video cable
- Signature AC to DC power adapter
- Signature camera

Procedure:

1. Power on your computer.
2. Connect Signature Camera to Telescope and connect Video cable (BNC end) to the CVBS video jack on the back of the Mallincam (do not power Signature). Keep lens cap on Telescope.
3. Connect the USB Video Adapter to computer (see **Installing MCV** in the Appendix for instructions on how to install the Mallincam MCV Video adapter).
4. Connect other end of Video cable (RCA) to the Video Capture Device (MCV).
5. Power the Signature (plug in the AC to DC adapter and connect to the Signature).
6. Start the video display software (AMCAP).
7. Choose the Video Source for the software (**USB 2828x Device** for the MCV).
8. If necessary select **Crossbar** from AMCAP to choose the RCA connection on MCV rather than the S-video.
9. Hold down the **Centre** button on the back of the Signature for about 2 seconds (release when you see OSD menu on your Video Display Software)
10. Using the back buttons on the Signature, ensure that Signature is using **Fix Shutter** at a reasonable setting (see **Appendix A – OSD Menu** for instructions).
11. Remove Lens cap from Telescope.
12. Adjust settings using the OSD menu to match viewing object

Connecting Signature to Computer (HD-SDI)

Requirements:

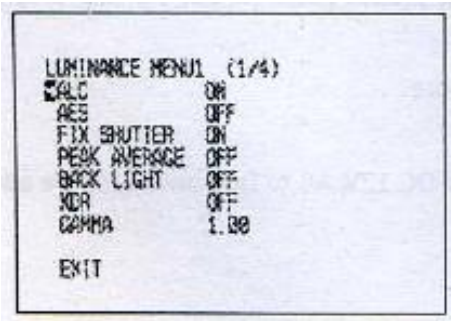
- Compatible Computer with software to display a SDI image (Blackmagic Media Express which is included free with the purchase of the UltraStudio SDI from Blackmagic)
- Signature Camera
- Power Supply for Signature Camera
- SDI Video Capture Device (Blackmagic UltraStudio SDI)
- HD-SDI Cable (SD59-BB50 - dual BNC connectors)

Procedure:

1. Power on your computer.
2. Connect the Signature Camera to Telescope and connect Video Cable (BNC end) to the SDI-HD video jack on the back of the Mallincam (do not power Signature). Keep lens cap on Telescope.
3. Connect SDI Video Adapter to computer (see **Installing Blackmagic Ultrastudio** in the Appendix for detailed instructions on how to install and connect to the Blackmagic Ultrastudio Video adapter).
4. Connect other end of SDI Video cable to the Video Capture Device (Blackmagic Ultrastudio).
5. Power the Signature (plug in the AC to DC adapter and connect to the Signature).
6. Start the Video Display Software (Blackmagic Media Express).
7. Choose the Video source for the software (**Blackmagic Ultrastudio**).
8. Ensure all resolutions match from the Signature camera to the Video Capture Device to the Video Display Software (1030p).
9. Hold down the **Centre** button on the back of the Signature for about 2 seconds (release when you see OSD menu on your video display software)
10. Using the back buttons on the Signature, ensure that Signature is using **Fix Shutter** at a reasonable setting (see **Appendix A – OSD Menu** for instructions).
11. Remove Lens cap from Telescope.
12. Adjust settings using the OSD menu to match viewing object

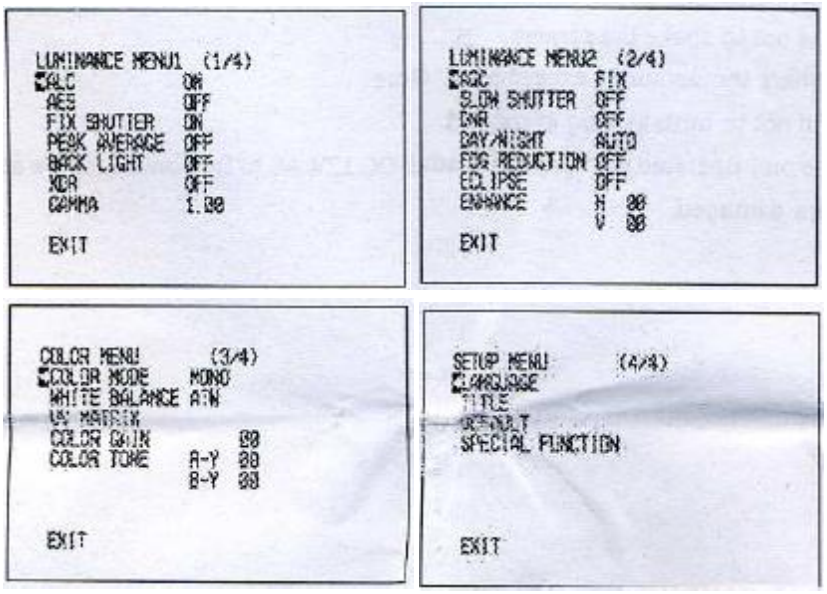
Controlling Signature using the Buttons

The Signature Camera has an OSD (**O**n **S**creen **D**isplay) menu system that allows you to control every aspect of the camera. You activate the OSD by holding down the **Centre Button** for 2 to 3 seconds. When activated the following screen overlay will be presented.



You control the arrow (see beside the **ALC** setting on the image above) by using the **UP** and **DOWN** Arrow Buttons on the back of the camera and you select an option by pressing the **CENTRE** (**ENTER**) Button. **The LEFT** and **RIGHT** Buttons take you other related screens. For example, with the **LUMINANCE MENU1 (1/4)** displayed press the **RIGHT** Button and you will see **LUMINANCE MENU2 (2/4),** Hit the **RIGHT** Button again and it will display the **COLOR MENU (3/4)** and finally hit **RIGHT** Button one more time to display the **SETUP MENU (4/4).** To can use the **LEFT** and **RIGHT** Buttons to cycle through the Main Menu screens.

When the OSD is activated and NO Button activity has been detected by the Signature Camera for about a minute, the Signature will EXIT the OSD screen automatically.



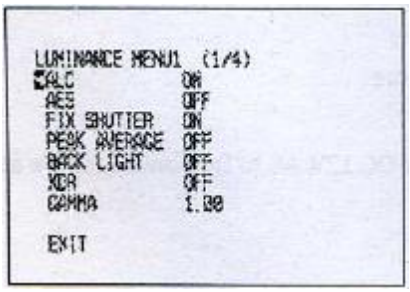
To close the OSD, look for an **EXIT** option at the Bottom of a Main Menu, move the arrow to **EXIT** and press the **CENTRE** Button.

Some Menu options may have its own **SUB MENU** (for example **SPECIAL FUNCTIONS** on the **SETUP MENU (4/4)**), when you are inside the **SUB MENU** you choose the **RETURN** option to return to **MAIN MENU** that called the **SUB MENU**. Again you can uses the **LEFT** and **RIGHT** Buttons to move from one **SUB MENU** to another if multiple **SUB MENU's** are available.

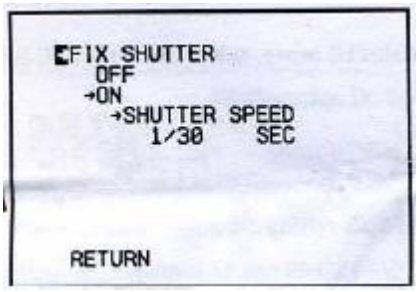
As an example to become familiar with the operation and use of the Buttons, we fill activate the **FIX SHUTTER** option from the **LUMINANCE MENU1** and will set it to **1/2000**.

If the OSD is not activated, then activate it by holding down the **CENTRE** Button.

Step 1 Using the **DOWN** Button move the Arrow so it is next to the **FIX SHUTTER** Option on the **LUMINANCE MENU 1**



Step 2 Press the **CENTRE** Button to select this Option. The OSD will display the **FIX SHUTTER** Menu.



Step 3 Press the **CENTRE** Button and the arrow will jump to the **OFF** or **ON** Option (depending upon what the Signature is set to). Using the **UP** or **DOWN** Button select **ON** and hit the **CENTRE** Button to select it.

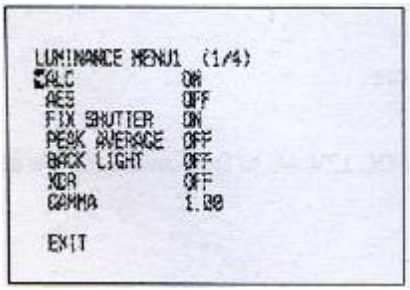
Step 4 The arrow should be pointing to the **SHUTTER SPEED** selection. Use the **UP** and **DOWN** Buttons keys to scroll through the Speed options, (Play and get familiar how to change the **SHUTTER SPEED** option. Stop when you had **1/2000 SEC** displayed in the OSD window.

Step 5 Press the **LEFT** Button to step back into the **ON OFF** options

Step 6 Press the **LEFT** Button to step back to the **FIX SHUTTER** option

Step 7 Press the **DOWN** Button to select the **RETURN** option.

Step 8 Press the **CENTRE** Button to return to the **LUMINANCE MENU 1 (1/4)** menu.



Step 9 Use the **UP** or **DOWN** Buttons to move arrow to **EXIT**, then press the **CENTRE** Button to shut down the OSD Menu

It is worth your time to become familiar on how to move around the OSD menu choices using the Back Buttons on the Signature Camera, As you will notice the amount of settings you can adjust on the Signature is astronomical (sorry), and each specific settings will be unique to you and your equipment and seeing conditions.

See the **APPENDIX A – OSD MENU** for explanations on what the specific settings do and how that may be helpful to improve your image.

Some settings deactivate other settings automatically while others affect the operation of the camera. These quirks will discussed in APPENDIX A. So if the Signature is behaving strangely after you make a setting change review the specific OSD choice in the APPENDIX A for a clue.

Using “Signature with Buttons” Software

One of the first things I noticed when using the Signature Camera is that I would make small experimental setting changes by using the Back Buttons on the camera. But, the act of touching the Signature affected the image, and sometimes I would press too hard on the back of the camera and would nudge to scope.

To resolve this I wrote my first simple program to control the Back Buttons from software using a RS485 to USB adapter and cable. Below you will find the technique and hardware I used to connect and control just the Buttons of the camera.

There are two versions, one that listens for the Signature to respond (this version is called **Back Buttons with Protocol**), while the other version (**Back Buttons**) just sends the command and assumes the Signature is working.

Why two versions? Some simple RS485 adapters and cable don’t have flow control capabilities to manage the data that can return from the camera. This is not an issue when just controlling the Buttons of the Signature since no important response is sent back, but when you want to capture a response from the Signature then a RS485/USB cable adapter must have flow control. This is needed for the Signature Application Software that is discussed in the next section.

Requirements:

- Compatible Computer with USB 2.0 Port
- **US Converters USB to RS485/422 Cable converter Model XS890**
- Signature Buttons Software

Procedure

- Connect the constructed RS485 – USB cable (as per **The Camera (RS485)** section at the beginning of the manual) to the Signature and a USB Computer Port.
- Visit **http://sdrv.ms/Lb3wV3** and open the folder **"Signature Camera Applications and Documentation"**
- Right click on "**Signature Button Control with Protocol**" and select download from the pop-up menu.
- Place this program in your location of choice.

I had to let my security software (Norton) know that this program was safe. It quarantined it the first time I ran it.

Connect all cables between the Signature and the Computer first. Then connect power to the Signature Camera. Although you may be connecting the cable using a USB port on your PC, the PC will see the connection as a Serial connection. The computer needs to know that you have a Serial cable and what *port* it must activate (this is done automatically when you plug in your Serial cable to a USB port on your computer). The Signature camera looks for a Serial connection when powered up.

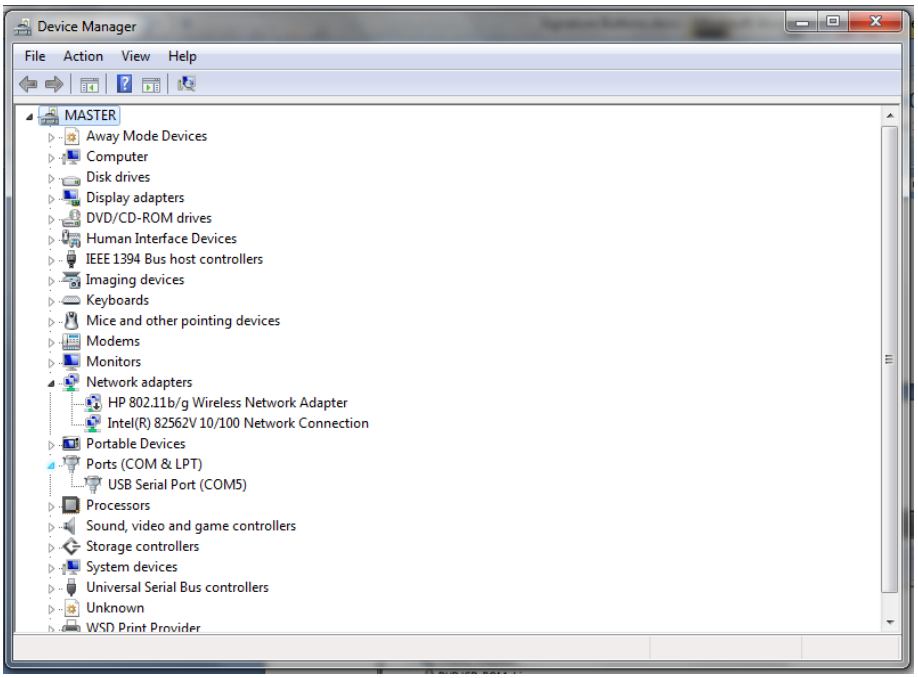
- Start your Video Display Software (AMCAP) and connect to Video Adapter

You will need to know what COM port the RS485 Cable Adapter is connected to.

To determine this:

- Windows 7: Click on the **Start Button**
  Windows 8.1: Hold down the **WIN** key and press the **X** key
- Choose and enter into the **Control Panel**
- Go into **Hardware and Sound**
- Click on the **Device Manager**
- Click on **Ports (COM and LPT) to open**

You should see the USB Serial Ports on your computer with the **COM** port number following. Note how mine says **COM5**.



You can select that port and modify the properties if required, (my software will do that automatically) but if you feel the urge then the following are the settings for the Signature Camera:

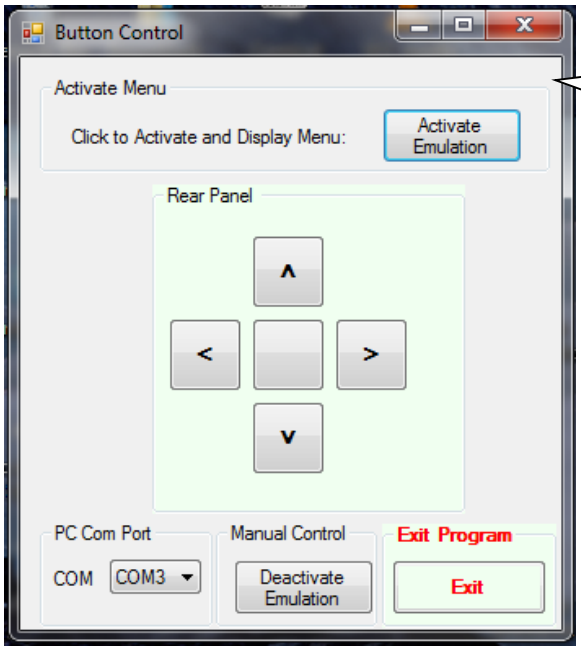
Communication Speed: 19200

Data length: 8 bit
Parity: None
Stop Bit: 1 bit
Flow control: None

If you get a popup message about a "*connection error with serial I/O in the message*" whenever you press a button, this means that the COM port is not communicating with the program. Just recheck connections.

- When the Signature Camera is powered up and your Video Display Software (AMCAP) is running (so you have a wonderful image of something in your display, for me it is always corn in the farmer's field).
- Double click on application: **Signature Button Control.exe** or on **Signature Button Control with Protocol.exe** (depending upon which version you downloaded)

The following image should appear on the screen.



The ***Signature Camera*** has a ***Communication ID*** number. The Default should be "**001**". That is the **ID number** I expect from your camera. So go into the ***Special Function (2/2)*** menu and ensure that the ***COMM ID*** is set to **001**.

Notice that the ***Rear Panel*** box is shaded red (this indicates that software does not yet allow you to control the camera (patience, my friends, there is a reason for this).

I, hopefully, have the software reading the available COM ports on your computer and it should display them in the ***PC Com Port*** Box (On the above sample image, it is displaying **COM3**). You will need to click on the ***COM*** button to display all of the available *Com Ports*, then click on the *Com Port* that your Signature Camera is connected to. (In my case, my Signature is actually connected to ***COM5***, so I would choose ***COM5*** from the drop down list, and now my ***PC Com Port*** would display ***COM5***.

Note: we still have not activated the software control yet, so a little more patience.

When you are ready to control the camera with this software, just click on the ***Activate Emulation*** button in the ***Activate Menu*** box at the top of the screen.

Three things should happen (if the gods are on our side):

- The ***Real Panel*** box will turn green and the buttons will be activated.
- The Signature Menu should now appear over your Signature image on the display software of your video software you are using.
- You may hear a beep (if your computer has speakers connected to windows driver).

If no menu pops up on your display software:

- Double check my **Connecting Signature to Computer** section on the last page. Double check everything.
- Is your COM port the correct one?
- Is the Camera Id set to "001"
- Try clicking on the **Activate Emulation** button again
- You must have irked the gods at some point in your life. I find screaming helps.

If you obtain the Menu on your display software, then you can use the buttons in the ***Rear Panel*** just as you would on the back of the Signature. Happy pressing.

To turn off the Menu display, just maneuver to the **EXIT** choice on the Signature OSD display as you would if you were controlling the Signature by pressing buttons on the back. To bring back up the Menu choice, just click on the ***Activate Emulation*** button on my software. Remember the Signature Camera will automatically close down the OSD Menu if it senses no activity.

When any piece of software has control of the buttons (such as this one), I found that the Signature will deactivate the manual control of the buttons on the back on the Camera (a safety measure I guess). If you need to get back manual control of the camera; click on the ***Deactivate Emulation*** button in the ***Manual Control*** box on my software and you have full manual control (notice that the ***Rear Panel*** will turn red to remind you that software does not control the buttons). You will need to click on the ***Activate Emulation*** to reactivate software control of the buttons.

When you are finished with the software (hopefully for the evening, not forever), Click on the ***Exit*** button in the ***Exit Program*** box. This will reactivate manual control to the Signature, deactivate the COM port, and shut itself down.

You then can control the Signature just like you were pushing the buttons at the back of the Signature Camera. See chapter **Controlling the Signature using Buttons** except rather than holding the **CENTRE** button own for three seconds to activate the OSD, you need only press the **Activate Emulation** button on the software.

Using "Signature Application Software"

This is a simple program that allows me to control the RED LED version of the Signature camera from my computer using a USB to RS485 Cable (see: **"Hooking up Hardware"** in Chapter 1 of this manual).

Before Starting the Software

Use the back buttons on the Signature and go into the second **Special Function Menu** and set the COMM ID to 001. This is required as the Default 000 Signature setting disables the Communications.

The Signature will remember this new COMM ID the next time you start the camera. Only when you do a Factory reset, does the Signature revert back to COMM ID 000.

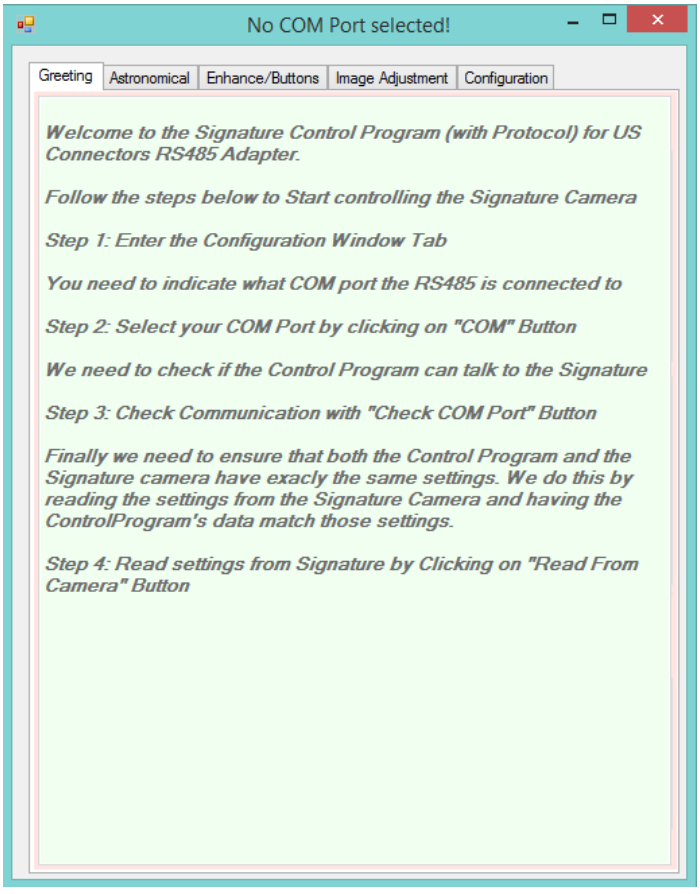
Starting the Software

When the Signature camera is powered up and your video software is running (so you have a wonderful image of something in your display, for me it is always corn in the farmer's field).

- Double click on application: **Signature Control.exe**

  (Remember Norton, or whatever security software you use, might not like the software. So, if prompted, tell Norton that the software is OK, Norton deleted the software on my computer first then asked if it was Ok, then brought it back out of Quarantine)

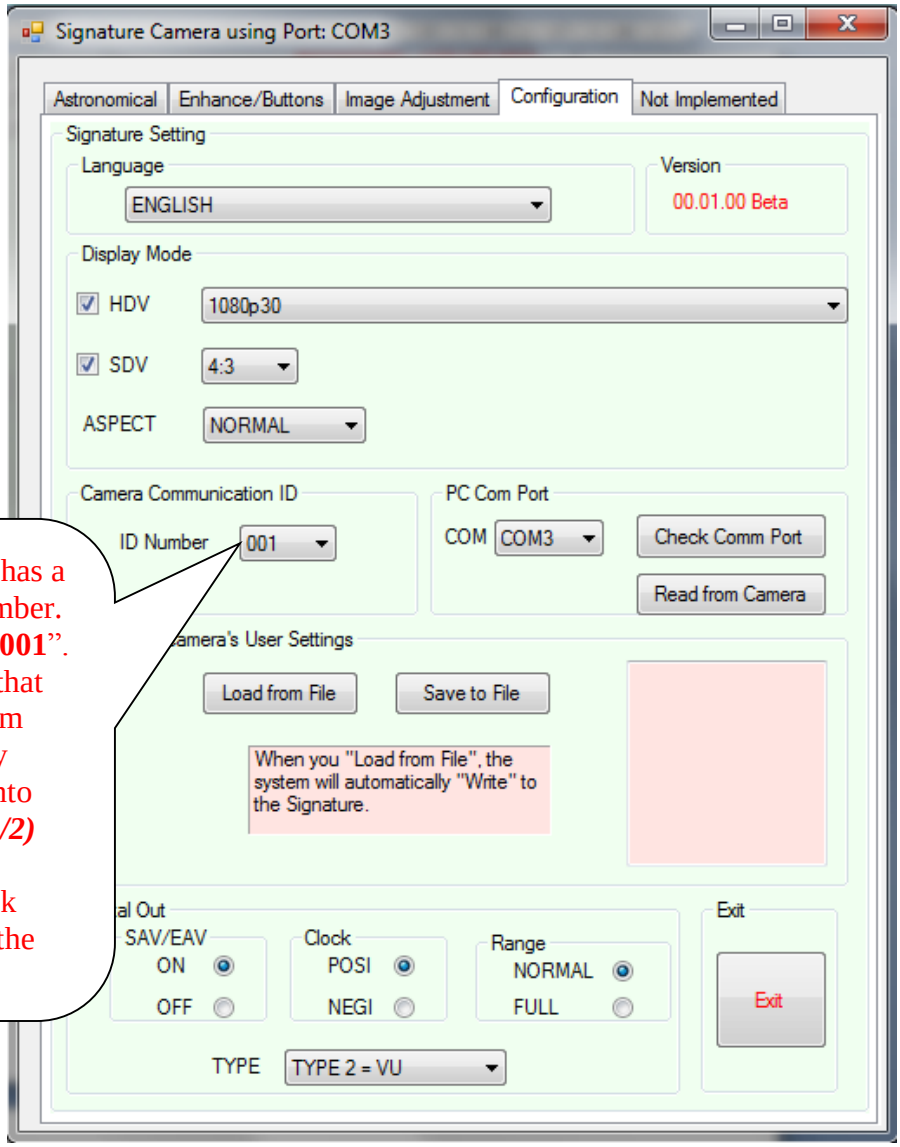
The following image should appear on the screen.


No COM Port selected!
Greeting
Astronomical
Enhance/Buttons
Image Adjustment
Configuration
Welcome to the Signature Control Program (with Protocol) for US Connectors RS485 Adapter.
Follow the steps below to Start controlling the Signature Camera
Step 1: Enter the Configuration Window Tab
You need to indicate what COM port the RS485 is connected to
Step 2: Select your COM Port by clicking on "COM" Button
We need to check if the Control Program can talk to the Signature
Step 3: Check Communication with "Check COM Port" Button
Finally we need to ensure that both the Control Program and the Signature camera have exacly the same settings. We do this by reading the settings from the Signature Camera and having the ControlProgram's data match those settings.
Step 4: Read settings from Signature by Clicking on "Read From Camera" Button

Step 1

Configuration tab at the top of the program.

The following screen should appear.



The ***Signature Camera*** has a ***Communication ID*** number. The Default should be "**001**". That is the **ID number** that the software expects from your camera (the factory default is **000**). So go into the ***Special Function (2/2)*** menu on the Signature camera by using the back buttons and ensure that the ***COMM ID*** is **001**.

Step 2

I, hopefully, have the software reading the available COM ports on your computer and it should display them in the ***PC Com Port*** Box (On the sample image, it is displaying **COM3**). You will need to click that button to display all of the available *Com Ports*, then click on the *Com Port* that your Signature Camera is connected to. (In my case, my Signature is actually connected to ***COM5***, so I would choose ***COM5*** from the drop down list, and now my ***PC Com Port*** would display ***COM5***.

Note: The current ***Com Port*** also appears at the top of the screen by the Program name.

Click on the "***Check Comm Port***" button.

The software will respond with a message letting you know if the software and the Signature are communicating

If you get the message "*I said Hello, and the Signature didn't like me*", then there is a communications problem between the Signature and the software double check the procedure "**Connecting the Signature to Computer"**

Some Notes

- You can load the Signatures current values so that the software matches the Signature by using the "***Read from Camera***" button (it can take up to 30 seconds). I recommend doing this unless you are going to issue a "***Load from File***"
- You can save your current Software camera settings by clicking on "***Save to File***" and giving it any name you choose. (can take up to 30 seconds)
- You can load a previous setting file into the Signature by clicking on "***Load from File***" and choosing a previous settings list to load. (Can take up to 30 seconds)
- You can activate the back buttons simulator on the Signature by clicking on the "***Enhance/Buttons***" tab and clicking on the "***Activate Keypad***" check box (note: you will have to use these buttons to get to the ***EXIT*** menu choice for the Signature onscreen Buttons commands to deactivate). Remember if you change a value by using the back buttons (either through software or actually pressing the buttons), the Software will not know what changes you made (you can do a "***Read from Camera***" to synch them up)
- Be gentle with the program as the Signature has to send an acknowledgement command back to the software every time you click on the button, and depending upon how much buffer is available, this will indicate how fast the camera can respond without getting confused.

Note: When any piece of software has control of the back buttons on the Signature (such as this one), I found that the Signature will deactivate the manual control of the buttons on the back on the Camera (a safety measure I guess). If you need to get back manual control of the camera; click on the ***Deactivate Emulation*** button in the ***Manual Control*** box on my software and you have full manual control (notice that the ***Rear Panel*** will turn red to remind you that software does not control the buttons). You will need to click on the ***Activate Emulation*** to reactivate software control of the buttons.

Note: If you had the software running and the computer hangs up (of cause not because of my software, I regularly sacrifice cookies to the gods), then just wait a few minutes and the Signature will automatically deactivate the Menu display on the display screen and you will again have manual control. Unplugging the Camera also works. Worst case, selecting factory defaults from the back of the Signature

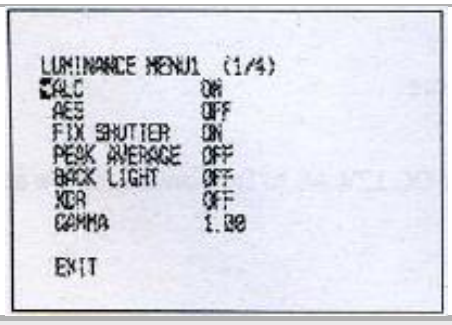
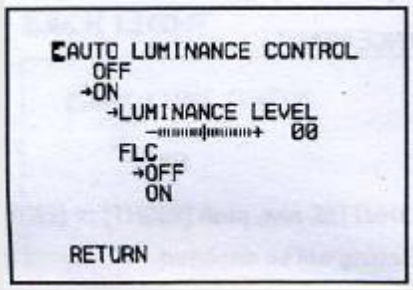
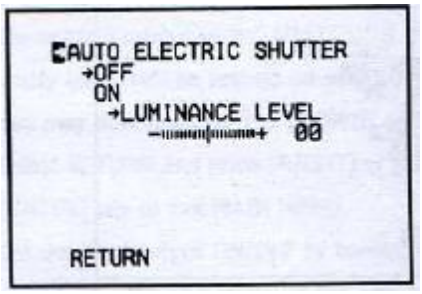
When you are finished with the software (hopefully for the evening, not forever), Click on the ***Exit*** button in the ***Configuration tab***. This will reactivate manual control to the Signature, deactivate the COM port, and shut itself down.

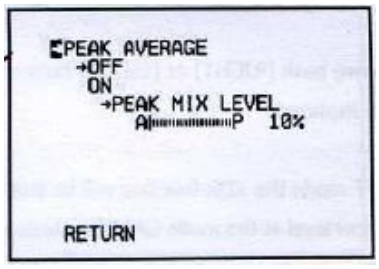
Connecting the RED LED Signature to Computer:

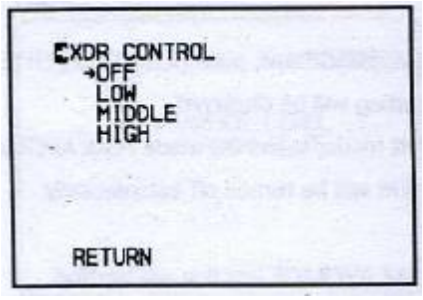
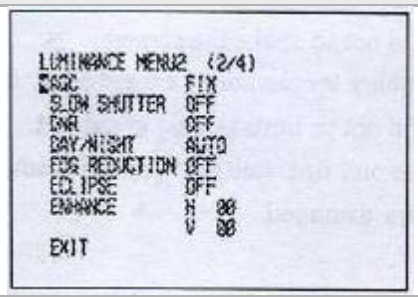
See the section "**Hooking up Hardware**" in "**The Camera (RS485 Connection)"** Heading of "**Chapter 1**"

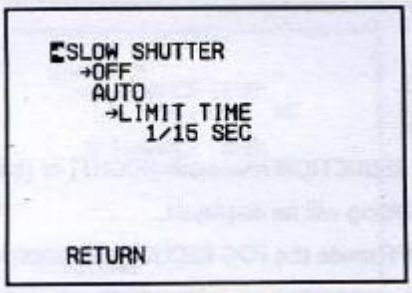
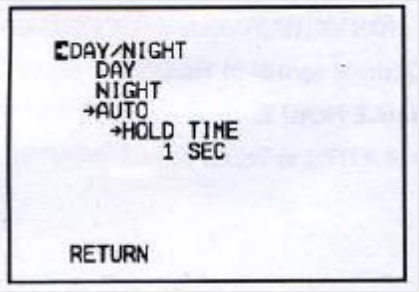
4. Reference

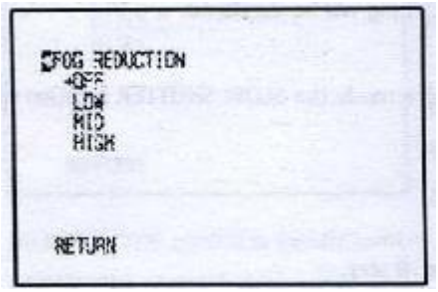
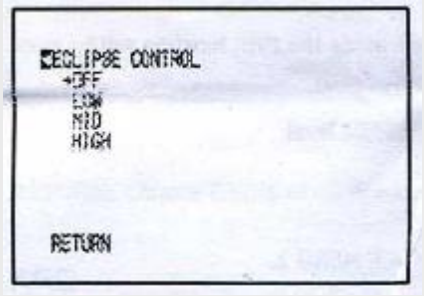
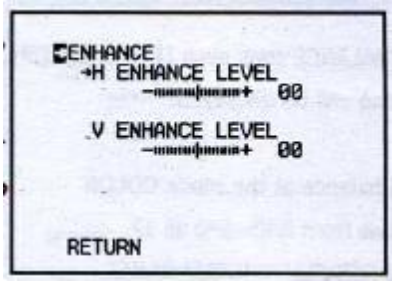
Appendix A – OSD Menu

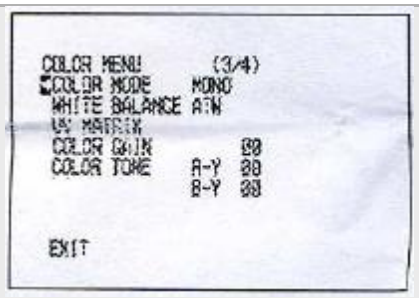
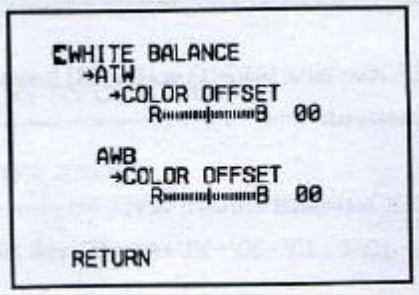
LUMINANCE MENU1 (1/4)	
ALC  This control will try to control the camera but was designed for daytime use.	Automatic Luminance Control is one of the three Luminance control Modes used by the Signature (the other two are FIX SHUTTER and AES Control). You can Turn it ON (and adjust the Luminance Level), OFF, or select FLC (Flick Less) If ALC is set to ON, then AES is automatically set to OFF For Astronomy use: **OFF**
AES  This control will try to control the shutter, but was designed for daytime use.	Auto Electric Shutter is one of the three Luminance control Modes used by the Signature (the other two are FIX SHUTTER and ALC). You can Turn it ON (and adjust the Luminance Level), or OFF If ALC is set to ON, then AES is automatically set to OFF For Astronomy use: **OFF**

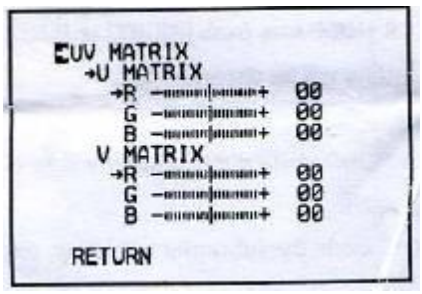
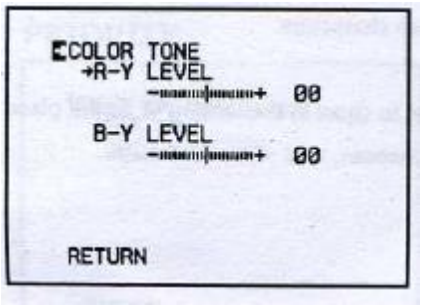
FIX SHUTTER Use this to control the Shutter, the 1/30 is longer so objects may appear bright while 1/10000 is a shorter exposure so objects may appear dim. Play with exposure settings to give correct brightness of object	Fix Shutter is one of the three Luminance control Modes used by the Signature (the other two are AES and ALC). You can Turn it ON (and adjust the Shutter Speed), or OFF. Shutter Speed settings in seconds: 1/30,1/50,1/60,1/100,1/120,1/180,1/350, 1/500, 1/750, 1/1000, 1/2000, 1/4000, 1/10000 If FIX SHUTTER is set to ON, then AES is automatically set to OFF For Astronomy use: **ON**
PEAK AVERAGE  	Peak detecting mode is a way to determine exposure index by average value of the whole image. System will adjust image brightness. BLC and XDR turn off when PEAK AVERAGE set to on For Astronomy use: **OFF**
BACK LIGHT 	The backlight correction is useful when the background is brighter than the subject. It adjusts the exposure. I don't touch this command in Signature Application Software For Astronomy use: **OFF**

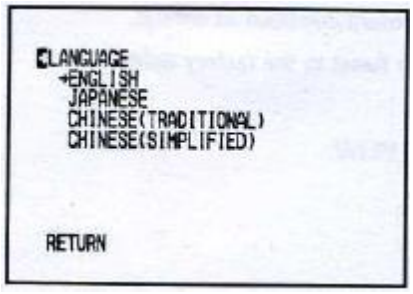
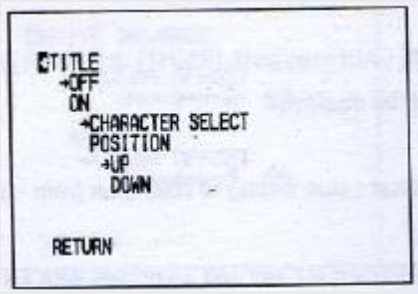
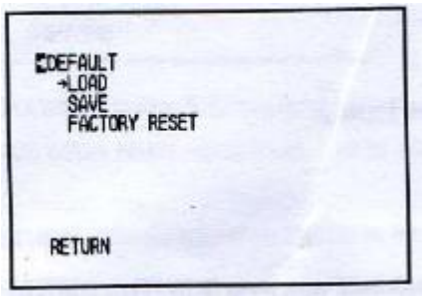
XDR 	Extended Dynamic Range is used to increase the ability to see objects in dimmer area of the screen. When XDR is set to LOW then the GAMMA setting automatically sets to 0.45 (at least is says so, But I don't see it changing on the Signature). For Astronomy use: **Experiment**
GAMMA 	Adjusts the brightness of image. It is actually the exponent on a power function thus CRT's and Laptops may require different settings to enhance signal. For dimmer objects set GAMMA to 1.00 for Medium set GAMMA to 0.7 and brighter objects set GAMMA to 0.45. When set to 1.00 then XDR, FOG, ECLIPSE are automatically set to OFF (at least that what is says in the manual. But I don't see it doing it. I do set them OFF in my software. For Astronomy use: **YES**
LUMINANCE MENU2 (2/4)	

AGC 	Auto Gain Control tells the camera how much amplifier gain you would like it to apply to the signal coming out of the CCD. It's similar to cranking up the ISO setting on your digital camera. The trick is to get the best image with smallest value. For Astronomy use: **set to FIX and adjust**
SLOW SHUTTER 	Slow Shutter allows you to set exposures to: 1/15s, 1/8s, 1/4s, 1/2s, 1s, 2s, 4s, and 8s. This setting is used for those dim planets. This Slow Shutter affects the timing of everything in the camera. If set to say 2s, then it will take 2s for the Menu Buttons to respond and display. Use caution when using due to response delay. For Astronomy use: **Optional**
DNR 	Digital Noise Reduction this setting has 4 levels (OFF, LOW, MED, HIGH) which may assist is removing noise from image or actual image details. Experiment with this setting. For Astronomy use: **Experiment**
DAY/NIGHT 	This setting adjusts the Signature to expect to be imaging either bright objects (DAY) or dim objects (NIGHT). Since most Solar Systems objects are bright, set to DAY and leave it there. For Astronomy use: **DAY**

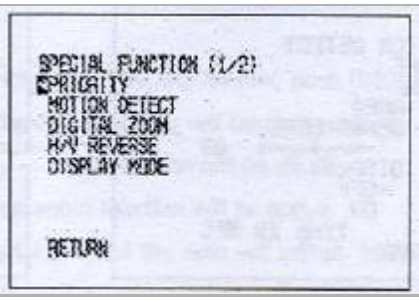
FOG REDUCTION 	The Fog Reduction setting has 4 levels (OFF, LOW, MID, HIGH). It provides the ability to reduce the I/R component (capture) of the image. When activated it automatically sets ECLIPSE to OFF and sets GAMMA to 0.45 (at least that's what the manual says, but I don't see it happening on the camera. I do turn Gamma to 0.45 is my software). For Astronomy use: **Experiment**
ECLIPSE 	Eclipse acts like a coronagraph which tries to block out bright components on the image. When activated FOG REDUCTION is automatically set to OFF and GAMMA is set to 0.45 (at least that's what the manual says, but I don't see it happening. I do turn Gamma to 0.45 in my software) For Astronomy use: **Optional**
ENHANCE 	Acts like APC (Advanced Pixel Control) on other cameras. It controls the amount of internal digital signal processing. If the values are too high then the stars look too blocky or may have Halos around them. ENHANCE lets you manipulate sharpness and the rendering of fine detail. The effect is much like unsharp masking. You can control either the horizontal or the vertical component of the pixel. The higher the level the more "blocky" the pixel looks. For Astronomy use: **Experiment**

COLOR MENU (3/4)	
COLOR MODE 	When set to ON the Signature will display Colour. When set to AUTO, you can adjust the AGC SUPPRESS Level. When set to OFF you get Black and White image but with subcarrier ON, also when you select MONO you will also obtain a Black and White image with subcarrier OFF. A subcarrier carries more information. For Astronomy use: **Experiment**
WHITE BALANCE 	The Signature camera provides two type of White Balance control (adjusts colours depending upon seeing and brightness). Auto Trace White functions by detecting white color in the scene at a color temperature from 2500 to 8000 Kelvin. The color temperature is being monitored continuously and the white balance is set automatically by internal controller. Auto White Balance is a preset type function whereby white color in the scene is detected and white balance is automatically adjusted to image on screen, then the setting status is stored. It automatically memorizes the adjusted white balance value every time the AWB button is turned on For Astronomy use: **Experiment**

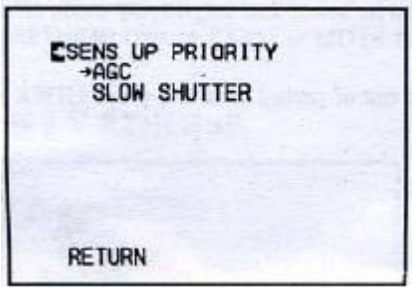
UV MATRIX 	The YUV model comprises *luminance* (Y) and two colour difference (U, V) components. The luminance can be computed as a weighted sum of red, green and blue components; the color difference, or *chrominance*, components are formed by subtracting luminance from blue and from red The UV representation of chrominance was chosen over straight Red and Blue signals because U and V are color difference signal. These settings allows you to adjust the colours difference values to help match the colours on the image to what they should be in the real world. For Astronomy use: **Experiment**
COLOR GAIN 	This setting allows you to increase the colour saturation of the image on the screen. For Astronomy use: **Experiment**
COLOR TONE 	Allows you to adjust the colour tone of the displayed images. The Red color difference signal is processed through R-Y and the Blue color difference signal is processed through B-Y Y holds the luminance value For Astronomy use: **Experiment**

SETUP MENU (4/4)	
LANGUAGE 	Just in case English isn't your thing, your can choose Japanese, Traditional Chinese, or Simplified Chinese. For Astronomy use: **Optional**
TITLE 	This setting allow you to create a small message that can appear either at the Top or Bottom of the screen. The message length is restricted to 24 characters. For Astronomy use: **Optional**
DEFAULT 	Use this setting specifically to reset the Signature to its Factory settings. Comes in handy if you have messed up settings and have lost communications. Note: Camera ID is set to 000, which turns off RS485 communications. You can save a current set of settings in the camera and reload those settings when required. For Astronomy use: **Optional**

SPECIAL FUNCTIONS (1/2)



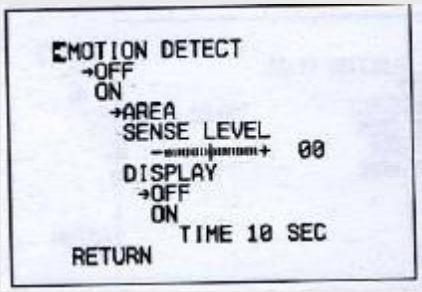
PRIORITY



This allows you to prioritize the Signature's Sense UP capabilities. SLOW SHUTTER slows down all operations of the camera even the menu display and button response. Be patient when using this setting.

For Astronomy use: **Experiment**

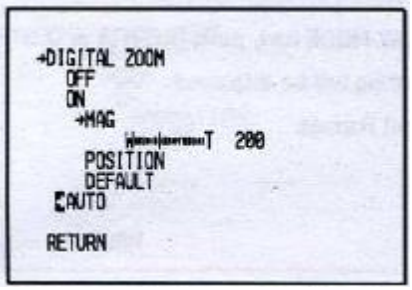
MOTION DETECT



This setting doesn't have a use (that I can think of in Astronomy. Not even included in my software.

For Astronomy use: **OFF**

DIGITAL ZOOM



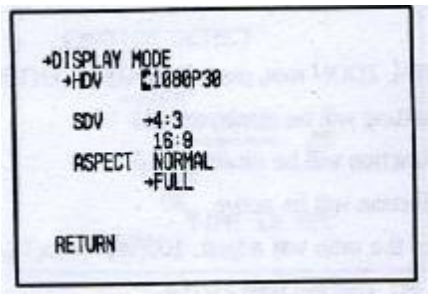
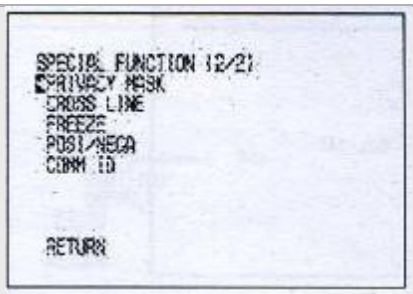
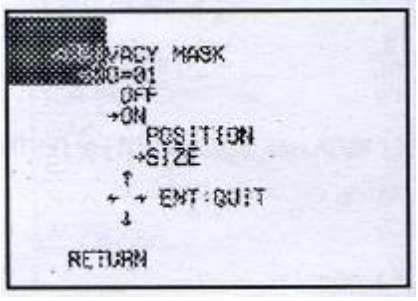
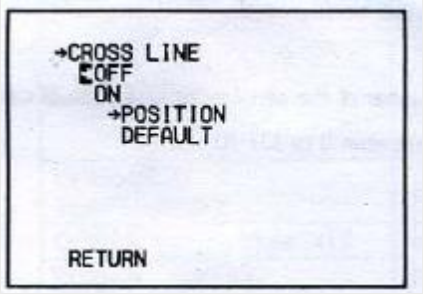
This setting allows you to zoom into a specific area of your screen. About a 4 times zoom is available

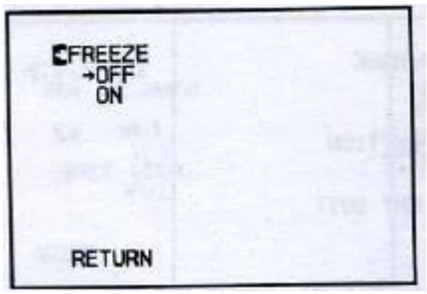
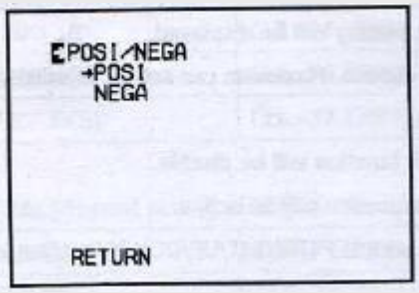
For Astronomy use: **Experiment**

H/V REVERSE

This setting allows you reverse either the Horizontal or the Vertical or even both Horizontal and Vertical image on the camera.

For Astronomy use: **Optional**

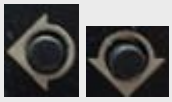
DISPLAY MODE 	These settings allow you to match the video output resolution to your capture device's (or monitor) input resolution: **720p60 @ 74.25MHz/16bit,** **1080p30 @ 74.25MHz/16bit,** **720p30 (A) @74.25MHz/16bit,** **720p30 (B) @37.125MHz/16bit,** **720p30 (C) @74.25MHz/8bit,** **1080i60@74.25MHz/16bit** You can even adjust the aspect ratio on your image to better match your equipment. For Astronomy use: **Experiment**
SPECIAL FUNCTIONS (1/2)	
PRIVACY MASK 	This setting allows you to black out certain areas of the screen. For Astronomy use: **OFF**
CROSS LINE 	With this setting the Signature will draw a set of thin lines that cross. You can use this CROSS LINE to centre on a planet. You can adjust the cross lines up down left and right to match your requirements. Default puts them back to the centre after you have moved them. For Astronomy use: **OPTIONAL**

FREEZE 	This setting when set to ON will freeze the image. When set to OFF, real time image continues of the screen. For Astronomy use: **OPTIONAL**
POSI/NEGA 	This setting is used to invert the image colour-wise (black becomes white and white becomes black, and each colour switches to its complementary colour). For Astronomy use: **OPTIONAL**
COMM ID 	This setting is used to set the communication ID for the Signature camera. The Default is 000 which has no communications abilities. When set to any other ID (001 to 127) then it can communicate thru the RS485 port. My software expects ID number 001. So if your are using the software “Buttons Control” then set the COMM ID to 001 For Astronomy use: **OPTIONAL**

Appendix B – Special Button Power Sequences

The Signature Camera has some Power Up sequences that will turn ON or OFF specific hardware features of the Camera. To activate the appropriate hardware features, just **HOLD DOWN** the appropriate button(s) on the back of the Signature when you **POWER UP** it up (Plug in the Power).

Button	Function
UP	Turns on NTSC Mode
RIGHT	Turns on PAL Mode
DOWN	Toggles CVBS activation Note: May require active SDI
LEFT	Toggles SDI activation

 **LEFT and DOWN**	Cycles thru the activations of Video Ports: • All **OFF** • CVBS **ON**, SDI **OFF** • CVBS **ON**, SDI **ON** • CVBS **OFF**, SDI **ON**
 CENTRE	Determines current Video settings on the Signature If both SDV and HDV are active then the camera will display something like this: ➢ **HDV DISPLAY 720p60** ➢ **SDV DISPLAY NTSC (16:9)** ➢ **ASPECT NORMAL** **Note:** When you release the Centre Button, Message will disappear.

Appendix C – Trouble Shooting Procedures

Problem	Solution
The Back LED doesn't light up	**This is a power problem.** • Check that the power plug is completely inserted into the back of the Signature. • That you have 12V and 1A of current from a correctly polarized AC to DC adapter. • Ensure your 12V DC battery is charged.
No Video Image from any output port	**Port(s) may be deactivated.** • Hold both the LEFT and DOWN buttons on the back of the Signature and Power Up. This process cycles thru the activation of the ports. • See Appendix B
The OSD screen is frozen	**Signature is lost trying to complete a task.** • Have you activated SLOW SHUTTER, as this slows down the internal operations of the camera when looking at a dim object? If so, try looking at a brighter object

	to get back response from the camera and deactivate SLOW SHUTTER. • Power Down and then Power Back UP • See Chapter 4 in SETUP MENU about how to do a Factor Reset

Appendix D – Installing MCV

The MCV-1 and the MCV-1e both come nicely packed in its own see-through packaging. The installation procedures will be the same for either package. The following are the techniques I have used on 4 different computers (3 laptops and 1 desktop). Some are 32 bit and others are 64 bit, all run windows 7. I have not encountered any problems installing this way.

Note

Do some pre-planning to minimize frustration that may occur when Windows gets a bit temperamental. I use both the Mallincam Xtreme and the Mallincam Signature exclusively with computer control, so I needed to assign one USB port for my video input (MCV) and another USB port for my serial cable (Belkin USB Serial cable). I even label which port is which on my lap-top (just in case I forget). I will always use the same port for each device, so that I will not have multiple versions of the drivers for multiple USB ports (you are just teasing the windows gods if you mix and match, and they will get even).

The MCV-1 and MCV-1e are heavy and depending upon your computer's manufacturer, the MCV may put some strain on the USB port. Therefore I use a small 6" USB cable extender, and plug the extender into the USB port for and plug the MCV into the other end of the extender.

Step 1

Open the Package

When you open the package you will find:

- 1 mini CD
- 1 User's Manual
- MCV-1 (1e) Do not inset this into **USB port** until instructed

• **Take the instruction booklet and the mini CD and place them on the table. If your computer cannot handle a mini CD (***you cannot physically lock the CD into the centre hole of the CD drive***), then you can down load the software by following the next step**

• **Go to the MallincamUSA website and download the latest drivers for the MCV device:**

http://www.mallincamusa.com/Files/MVC-1%20Software%20CD.zip

This file is in a zip format, so you will need to unzip the file

You should see 5 folders and about 4 other files inside the unzipped folder.

Step 2

Insert the MCV-1 or MCV-1e

*Remember the **USB port** you choose for the **MCV**; you will always use this **USB port** for the **MCV**.*

- The **Windows** will find new hardware and will attempt to load drivers. It will most likely fail on one driver. Don't worry that is why you have the driver installation software.
- Either insert the **CD** or run the program **autorun.exe** in the folder of the file you downloaded.
- When you see the green **USB 2.0 HD HV Grabber** screen, CLICK on the option: **Install Drivers**.

- You may receive a **Windows** warning asking you if you want to allow the installation to run, Click **Yes**.
- Follow the instructions on **the Installation of USB Video/Audio Device Driver** Wizard that is displayed on the desktop.
- The installation takes under a minute. Once complete, you will be presented with a notification windows, click **Finish** with the "**Yes, I want to restart my computer now**" option selected.
- The computer will restart. Login in as you normally would.
- You don't need to install any of the other files from the **HD AV Grabber** installer.

Checking out the MCV-1 or MCV-1e

It is always a good idea to check out the **MCV-1e** to see if it is running correctly after you have done a first time installation.

- Start the **Image** software that you will using to display your Signature Video image such as: AmpCap, SharpCap, VirtualDub,..)
- In the **Video Device** menu, you should see a **Video Source** called "**USB 2828x Device**". This is the driver for either the **MCV-1** or **MCV-1e** device. This is the one we want. Select it
- Power up your Signature, and you should be able to see the camera's images on the video window of your software.

Oh No, the video is not working correctly, strange stuff is happening and it is not my camera

After you have checked all of the obvious: Power to the Signature, Software (AMCAP) is pointing to the correct input device on the MCV (remember it has 2 connection types: RCA and SVIDEO).

- Down load the updated **MCV-1** or **MCV-1e** driver from the Mallincam Software Links Site:

  I have put a copy here on my own site of the latest driver called:

  BDA_UAC_WHQL_082311_Setup.rar

  My file location: http://sdrv.ms/Lb3wV3

  Note this is a **RAR** file, and you will need a free **RAR** extractor program to unzip this file. A good free **RAR** extractor is called: **7-Zip**

Appendix E – Installing Blackmagic UltraStudio

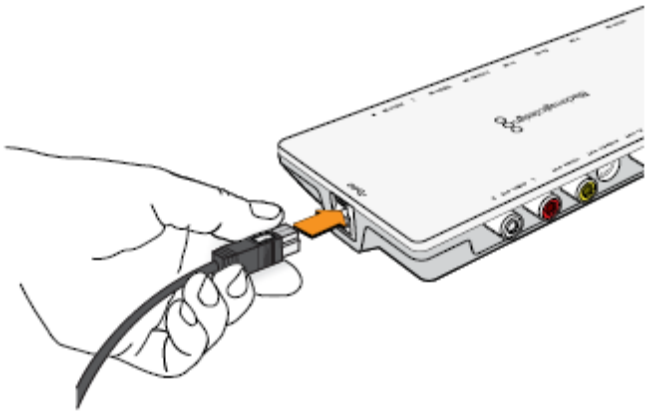
The first step in installing the Blackmagic UltraStudio to your computer is to attach the hardware to your computer.

Requirements:

- Compatible Computer with USB 3.0 Port
- Signature Camera
- Power Supply for signature Camera
- Blackmagic UltraStudio SDI
- HD-SDI Video Cable (SD59-BB50 - dual BNC connectors)
- USB 3.0 Cable

Procedure:

- Connect the SDI Video cable from the HD-SDI BNC connector on the back of the Signature Camera to the BNC input connect on the Blackmagic UltraStudio.
- Connect the USB 3.0 cable from the BlackMagic UltraStudio to a USB 3.0 Port on your computer.
- Power Up your Computer
- Power Up the Signature



After the UltraStudio has been connected to your computer it is now time to install the Blackmagic Drivers onto your computer.

Follow install prompts.

1. Ensure you have the very latest driver. Visit www.blackmagicdesign.com/support
2. Open the “Desktop Video” folder and launch the “Desktop Video” installer.
3. The drivers will now be installed on your system. An alert will appear: *“Do you want to allow the following program to install software on this computer?*” Click **Yes** to continue.
4. You will see a dialog bubble saying “*found new hardware” and the hardware wizard will appear. Select “install automatically*” and the system will find the required Desktop Video drivers. You will then receive another dialog bubble saying “*your new hardware is ready for use.*”
5. Now restart your computer to enable the new software drivers.

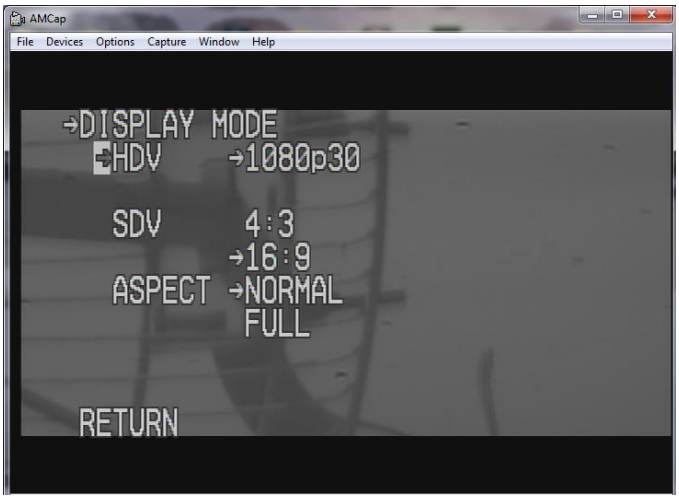
The Desktop Video software installer installs the following components:

•Blackmagic Desktop Video drivers

•Blackmagic Design Control Panel

- Blackmagic Design LiveKey
- Blackmagic Media Express
- Blackmagic Multibridge Utility
- Blackmagic AVI and QuickTime™ codecs
- Blackmagic Disk Speed Test
- Adobe® Premiere Pro, After Effects, Photoshop presets and plug-ins
- Avid Media Composer 6.x plug-ins
- eyeon Fusion plug-ins

If this is the first time you are trying to connect the Signature to the UltraStudio, you will need to check and if necessary change the HD output to 1080p30. Connect your Signature using the Composite video port (Not the SDI HD) to your computer then using any video display capture software (AMCAP), hold the middle key on the Signature to obtain the menu, using the "Right Arrow" get to "Special Function (1/2)" Menu, Select it using "Middle Button" . Using the down arrow, choose "Display Mode". Within "Display Mode", ensure that the "HDV" is set to "1080p30"



It is also worth your while to get the Signature working using the Standard composite BNC connection, It has "less" requirement in synching with other software. You can output both SDI and Composite at the same time. I use composite if I broadcast on NSN, and SDI if I save my images or just want to look at a higher resolution video for outreach purposes.

Note: *I have found that Versions later than 9.5.2 of Blackmagic Design Desktop Video, use too much cpu cycle time for the* ***Blackmagic Media Express*** *to lock on, and you cannot obtain a video image with the Dell XPS Laptop. But, you can use the Blackmagic WDM to obtain an image with* ***SharpCap*** *or* ***Virtual Dub*** *(both have the capability to grab 1080p data. These two software packages are how I normally capture images from the UltraStudio.*

Getting SDI Video Images

Step 1: Power up the Signature (LED light should shine, Mine is the RED LED version)

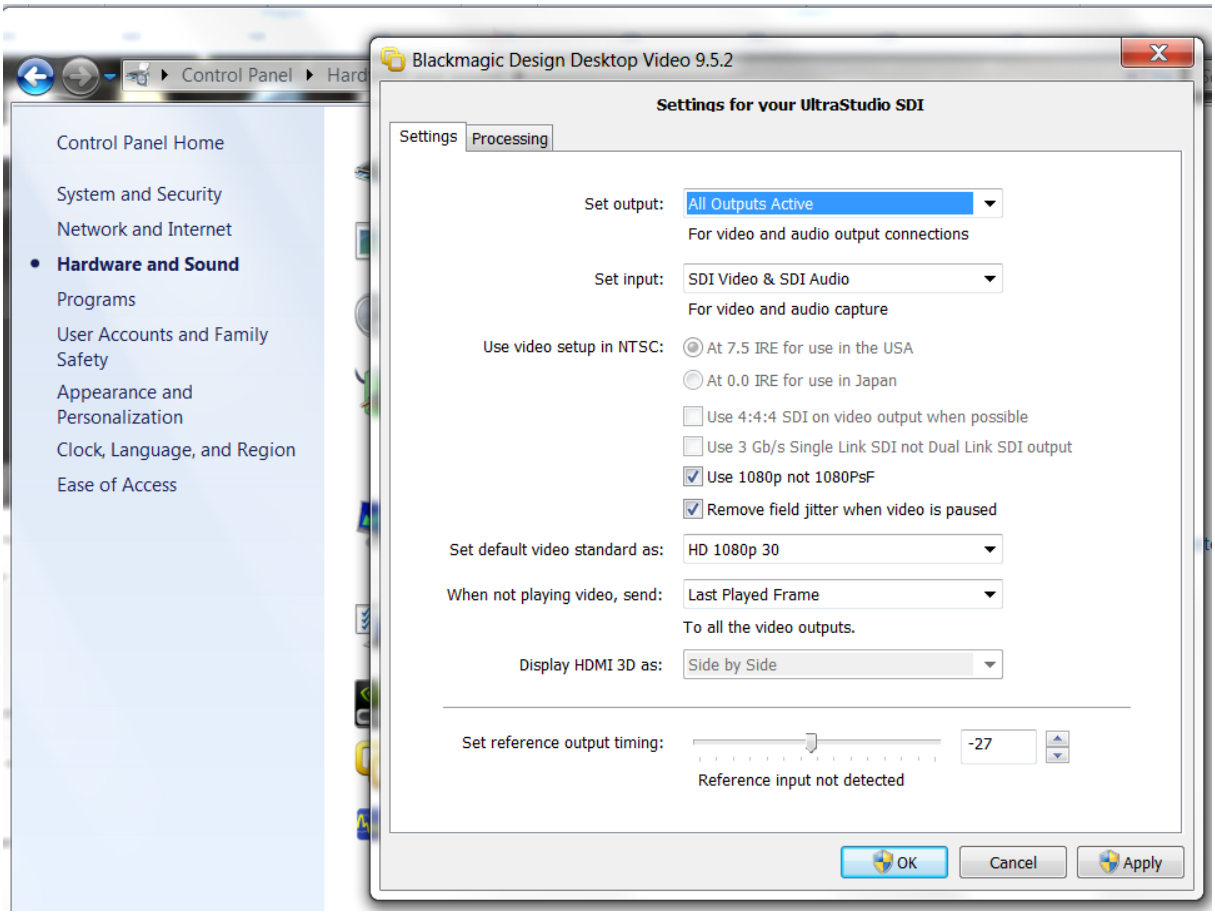
Step 2: Power up the Computer

Step 3: Activate the Windows "Control Panel"

Step 4: Select "Hardware and Sound"

Step 5: You should have a selection "Blackmagic Design Control Panel" near the bottom, select it

Step 6: Match my settings as seen in picture below (Check "Use 1080p not 1080psf")



Step 7: Select **OK** to accept these settings and close the "Control Panel"

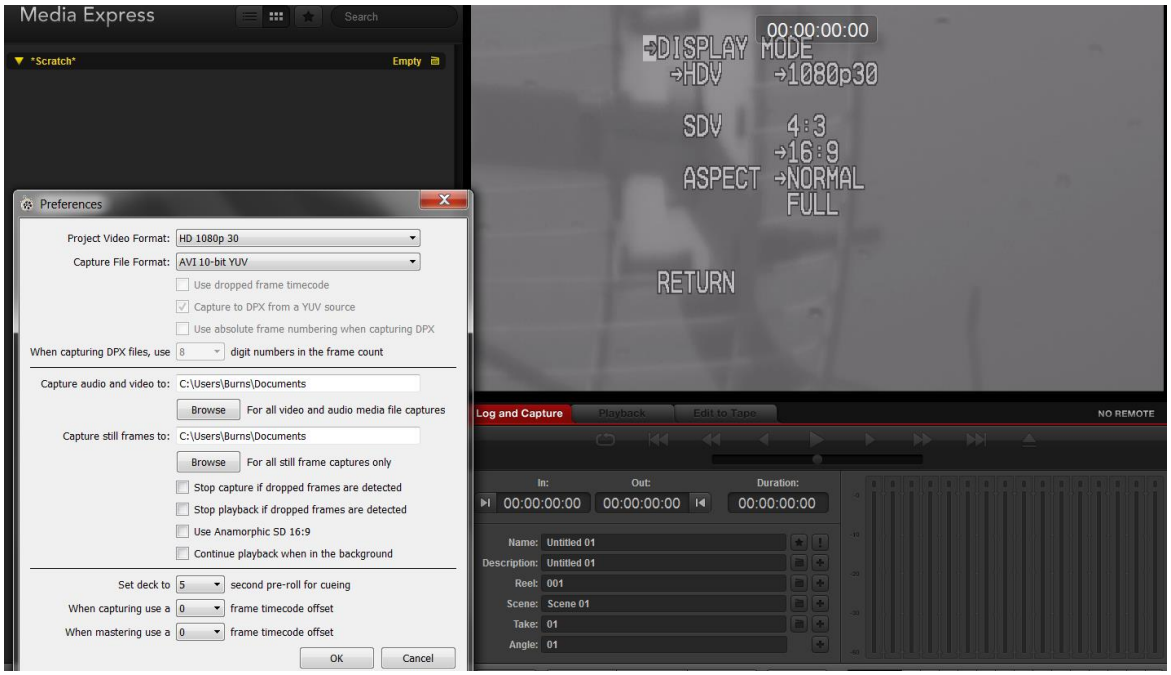
Step 8: Start the "**Blackmagic Media Express**" software

Step 9: Under the "**EDIT**" tab, choose "**Preferences**"

Step 10: In the "**Project Video Format**" Drop-Down, choose "**HD1080p 30**"

Step 11: If you are going to save video you can change the "**Capture File format**" to "**AVI 10 bit"**

Step 12: Match the settings I have below (you can always adjust them later, but ensure at 1080p 30)



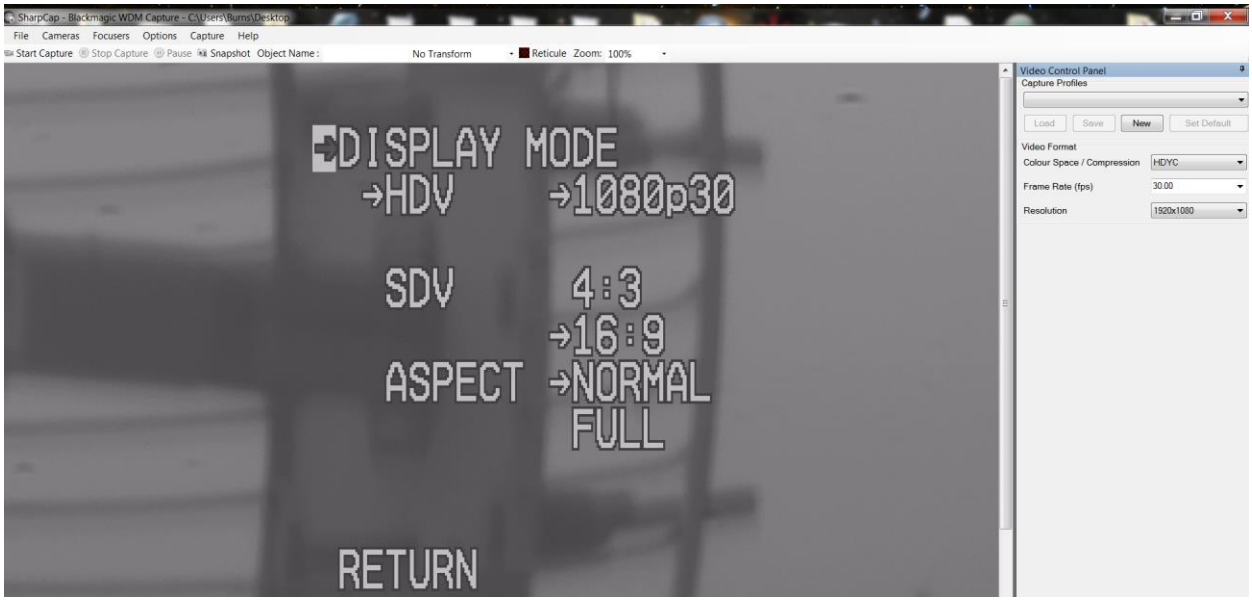
You should be up and running.

Note have the “Blackmagic Media Express” selected to the “Log and Capture” Tab, this is the Video Display Window, the other tabs allow you to play videos that you have captured.

Using other Software

You can view the video with other software rather than the “Blackmagic Media Express”. For example using the SharpCap, select the camera to “Blackmagic WDM Capture”. In the “Video Control Panel” of Sharpcap, ensure you have 25fps at 1920 x 1080. Remember it takes about 5 seconds or so before the image makes it to the screen (at lot of syncing going on here) Note: sometime syncing is a problem, so with Sharpcap, if you do not see an image after a few seconds, change the frame rate, It may take a few selection until you obtain an image.

If you are using other software besides “Blackmagic Media Express” that software has to capture 1920 x 1080 otherwise you will see only a zoomed portion of the actual screen. (I use the SharpCap software).



The crucial thing to remember when using SDI output, is that you need to match the output mode (say 1080p30) to the input mode of any hardware or software that is capturing the image.

Appendix F – RS485 Connection Options

This appendix includes the current list of compatible RS485 adapters that users have successfully connected to the Signature Camera.

US Converters RS485/422 cable converter Model Number XS890

This RS485/422 adapter can be purchased at the US Converters online website (http://www.usconverters.com/) for about $40 US

USB to RS485/422 Cable

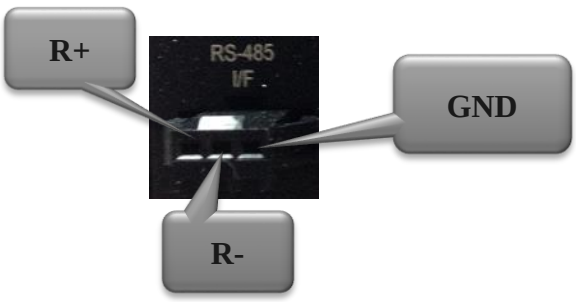
Screw Terminal Board

Rock's Signature Connector

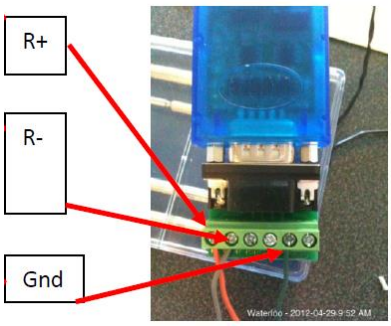
This is a high quality Plug-and-Play *USB to RS485 / RS422 converter* optimized for Windows 7 and Windows 8 but will also work perfectly fine with Windows 98, 2000, XP and Vista. The RS485 / RS422 end is a standard 9-pin D-sub connector with a **Screw Terminal Board** included for easy connection of cables from **Rock's RS485 Signature Connector**. The cable length is about 56" and can be extended via a USB extender cable at the USB end, or a set of longer wires between the **Screw Terminal Board** and **Rock' s Signature Connector.**

Connecting Hardware

Attach **Rock's Signature Connector** to the **Screw Terminal Board** by matching R+, R- and GND.



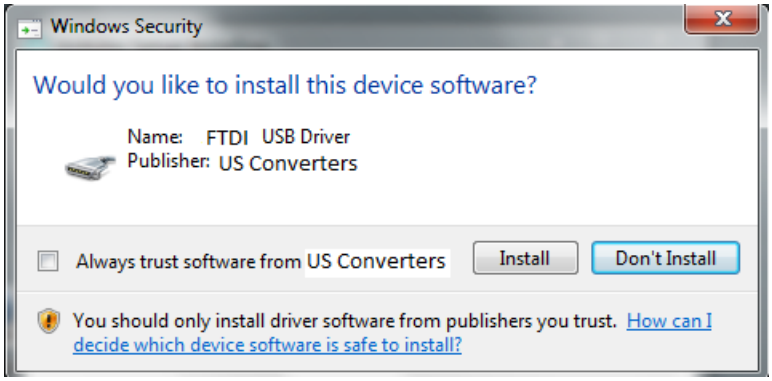
Attach: Red (R+) wires to left (first) pin on **Screw Terminal Board**, Black (R-) wire to second pin on the **Screw Terminal Board**, and Yellow (GND) wire to 5th pin on the **Screw Terminal Board**.



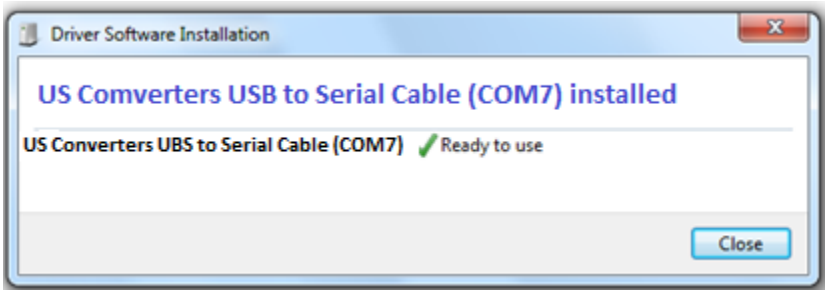
Once attached, connect this combination to the **USB to RS485/422 Cable**. You should now have connection path that allows you to attach one end to a USB Port on your computer and the other end to the RS-485 Port on the back of the Signature camera.

Installing Driver Software

Plug in the completed cable into a free USB Port on your computer. Windows should automatically download and install the correct drivers from internet that are needed to run this converter.


Windows Security
Would you like to install this device software?
Name: FTDI USB Driver
Publisher: US Converters
Always trust software from US Converters
Install
Don't Install
You should only install driver software from publishers you trust. How can I decide which device software is safe to install?

Once completed a message similar to the one below should appear.


Driver Software Installation
US Comverters USB to Serial Cable (COM7) installed
US Converters UBS to Serial Cable (COM7) Ready to use
Close

Make note of the COM Port number that Windows assigns to your **USB to RS485/422 cable Adapter**, for this will be required by the software that controls the Signature.

Windows Operating system knows nothing about RS485, all it knows is that you have a USB device attached, and that this device is acting like a Serial Cable.

If Windows cannot load the drivers from the internet, then just follow the instructions that came with your RS485 adapter. There should be a CD that came with your **USB to RS485/422 Cable Adapter** that contains all of the necessary drivers. Better still, visit the website of the US Converters and download and install the latest drivers for your specific operating system.

US Converters RS232 -RS485 Converter Model Number XS201A

This RS232 adapter can be purchased at the US Converters online website (http://www.usconverters.com/) for about $20 US, but you will need a **USB to RS232 Adapter** and **RS232 Cable** extender (Male-to-Female) of a length that meets your distance requirements. With this system, it is assumed that you already have a **USB to RS232 Adapter** installed, so no software installation is required.

USB to RS232 Adapter

RS232 Cable

US Converters RS232 to RS485 Adapter

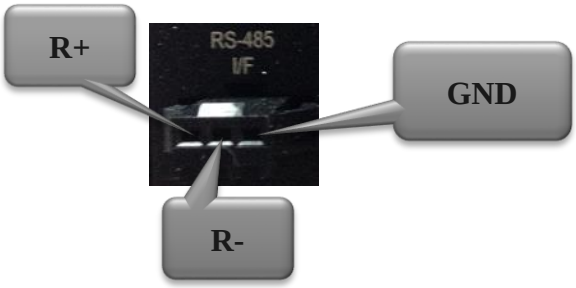
Rock's Signature Connector

Connecting Hardware

This setup assumes that you already have an installed **USB to RS232 Adapter**. Then you only need to attach your Male-to-Female **RS232 Cable** (Serial cable) to your **USB to RS232 Adapter**. Now attach the **US Converters RS232 to RS485 converter** to the **RS232 Cable**.

Finally attach **Rock's Signature Connector** to the green **Screw Terminal Board** of the **US Converters RS232 to RS485 Adapter**.

When attaching **Rock's Signature Connector** to the **Screw Terminal Board** by matching R+, R- and GND.



Attach: Red (R+) wires to left (first) pin on **Screw Terminal Board**, Black (R-) wire to second pin on the **Screw Terminal Board**, and Yellow (GND) wire to 3rd pin on the **Screw Terminal Board**.

Once attached, you should now have connection path that allows you to attach one end to a USB Port on your computer and the other end to the RS-485 Port on the back of the Signature camera.

Windows Operating system knows nothing about RS485, all it knows is that you have a USB device attached and this device is acting like a Serial Cable.

Appendix G – Signature Setting Example Sheets

The following pages are due to the hard work of both **Steve Hempell** and **Jack Huerkamp.** I have included their worksheets and setting here:

Mallincam Signature Settings

Object Observed:	Telescope (Aperture, F ratio):	Monitor Type:
		Computer Config:

MENU			Setting	Settings		
1 OF 4	**LUMINANCE MENU 1**		On/Off/Auto		Value	Telescope Accessories Etc.
	ALC			Luminance Level		Filter(s)
		FLC				
	AES			Luminance Level		Barlow
	FIX SHUTTER			Shutter Speed		
	PEAK AVERAGE			Peak Mix Level		Focal Reducer
	BACK LIGHT			Area		
	XDR			Low/Med/ High		Spacers
	GAMMA			1.0, 0.45, CRT, LCD		
2 OF 4	**LUMINANCE MENU 2**					Other
	AGC	AUTO		Max Gain Level dB		
		FIX		Fix Gain Level dB		
	SLOW SHUTTER			Limit Time Sec		
	DNR			Low, Med, High		Site type
	DAY/NIGHT			Day, Night, Compl		
		AUTO		Hold Time Sec		Seeing
	FOG REDUCTION			Low, Med, High		
	ECLIPSE			Low, Med, High		Transparency
	SHARPNESS					
	ENHANCE	HDV		H		See: http://www.Skyandtelescope.com//Resources/darksky/3304011.html for site type or
				V		
		SDV		H		
				V		
3 OF 4	**COLOR MENU**					See: http://www.astromax.Org/faq/aa01faq14.htm For seeing and transparency
	COLOR MODE			Gain Control		
		AUTO		AGC Suppress Level		
	WHITE BALANCE	ATW		Color Offset		
		AWB		Color Offset		Notes:
	UV MATRIX	V		R		
				G		
				B		
		H		R		
				G		
				B		
	COLOR GAIN			Gain Control		
	COLOR TONE			R-Y Level		
				B-Y Level		
4 OF 4	SETUP MENU					
	SPECIAL FUNC 1					
	PRIORITY			AGC, SLOW SHUTTER		
	MOTION DETECT			AREA SENSE LEVEL		
	DISPLAY			TIME		
	DIGITAL ZOOM			MAG		
				POSITION		
	DISPLAY MODE	HDV/SDV		720P60 ETC/ 4:3, 16:9		
		ASPECT		NORMAL/FULL		
	DIGITAL OUT	CODE				
		CLOCK		POSI, NEGA		
		RANGE		NORMAL, FULL		

Mallincam Signature Settings								
Mars			Orion XT-12,f/4.9			Speco		
						Computer Config:		
MENU			Setting	Settings				
1 OF 4	**LUMINANCE MENU 1**		On/Off/Auto			Value	Telescope Accessories Etc.	
	ALC		Off	Luminance Level			Filter(s)	IR
		FLC	Off					
	AES		Off	Luminance Level			Barlow	
	FIX SHUTTER		1/30	Shutter Speed				
	PEAK AVERAGE		Off	Peak Mix Level			Focal Reducer	
	BACK LIGHT		Off	Area				
	XDR		Off	Low/Med/ High			Spacers	
	GAMMA		1	1.0, 0.45, CRT, LCD				
2 OF 4	**LUMINANCE MENU 2**						Other	
	AGC	AUTO		Max Gain Level dB				
		FIX	On	Fix Gain Level dB		6 db		
	SLOW SHUTTER		Off	Limit Time Sec				
	DNR		Off	Low, Med, High			Site type	home
	DAY/NIGHT		Night	Day, Night, Compl		night		
		AUTO		Hold Time Sec			Seeing	
	FOG REDUCTION		Off	Low, Med, High				
	ECLIPSE		Off	Low, Med, High			Transparency	
	SHARPNESS							
	ENHANCE	HDV		H			See: http://www. Skyandtelescope.com// Resources/darksky/3304011. html for site type or	
				V				
		SDV		H				
				V				
3 OF 4	**COLOR MENU**						See: http://www.astromax. Org/faq/aa01faq14.htm For seeing and transparency	
	COLOR MODE		On	Gain Control				
		AUTO		AGC Suppress Level				
	WHITE BALANCE	ATW	On	Color Offset				
		AWB		Color Offset			Notes:	
	UV MATRIX	V			R	+104		
					G	-105		
					B	+34		
		H			R	+127		
					G	+81		
					B	-128		
	COLOR GAIN			Gain Control		4		
	COLOR TONE			R-Y Level		15		
				B-Y Level		10		
4 OF 4	SETUP MENU							
	SPECIAL FUNC 1							
	PRIORITY			AGC, SLOW SHUTTER				
	MOTION DETECT			AREA SENSE LEVEL				
	DISPLAY			TIME				
	DIGITAL ZOOM			MAG				
				POSITION				
	DISPLAY MODE	HDV/SDV		720P60 ETC/ 4:3, 16:9				
		ASPECT		NORMAL/FULL		Normal		
	DIGITAL OUT	CODE						
		CLOCK		POSI, NEGA				
		RANGE		NORMAL, FULL				

Mallincam Signature Settings							
JUPITER			Telescope (Aperture, F ratio): LX 200 14" F10 Camera@ Prime Focus		Monitor Type: COMPUTER LCD & CRT		
					Computer Config: ROXIO EASY VHS TO DVD		
MENU			Setting	Settings			
1 OF 4	**LUMINANCE MENU 1**		On/Off/Auto		Value	Telescope Accessories Etc.	
	ALC		Off	Luminance Level		Filter(s)	IR
		FLC	Off				
	AES		Off	Luminance Level		Barlow	
	FIX SHUTTER		On	Shutter Speed	1/30		
	PEAK AVERAGE		Off	Peak Mix Level		Focal Reducer	
	BACK LIGHT		Off	Area			
	XDR		Off	Low/Med/ High		Spacers	
	GAMMA		1	1.0, 0.45, CRT, LCD	CRT		
2 OF 4	**LUMINANCE MENU 2**					Other	
	AGC	AUTO		Max Gain Level dB			
		FIX	On	Fix Gain Level dB	8 db		
	SLOW SHUTTER		Off	Limit Time Sec			
	DNR		Off	Low, Med, High		Site type	home
	DAY/NIGHT		Night	Day, Night, Compl	Day		
		AUTO		Hold Time Sec		Seeing	4
	FOG REDUCTION		Off	Low, Med, High			
	ECLIPSE		Off	Low, Med, High		Transparency	4
	SHARPNESS		On				
	ENHANCE	HDV		H	-35	See: http://www. Skyandtelescope.com// Resources/darksky/3304011. html for site type or	
				V	-35		
		SDV		H	+50		
				V	+50		
3 OF 4	**COLOR MENU**					See: http://www.astromax. Org/faq/aa01faq14.htm For seeing and transparency	
	COLOR MODE		On	Gain Control			
		AUTO		AGC Suppress Level			
	WHITE BALANCE	ATW	On	Color Offset	00		
		AWB		Color Offset		Notes:	
	UV MATRIX	V		R	0		
				G	0	Using same settings Speco	
				B	0	9" showed grayish	
		H		R	0	Jupiter with two dark gray	
				G	0	bands	
				B	0	Same settings on ETX 125	
	COLOR GAIN			Gain Control	-13	On 2.5" car backup LCD HR	
	COLOR TONE			R-Y Level	-35	Monitor showed gray sharp	
				B-Y Level	-25	Jupiter with dark gray bands.	
4 OF 4	SETUP MENU					(better viewing night than	
	SPECIAL FUNC 1					Above)	
	PRIORITY			AGC, SLOW SHUTTER	AGC	On night with bad viewing	
	MOTION DETECT		OFF	AREA SENSE LEVEL		On ETX 125 showed blueish	
	DISPLAY			TIME		Fuzzy Jupiter, no bands	
	DIGITAL ZOOM		ON	MAG	148	On computer screen using	
				POSITION		Syntek DC-112 X and	
	DISPLAY MODE	HDV/SDV		720P60 ETC/ 4:3, 16:9	720p60	Deep Sky Imaging software	
		ASPECT		NORMAL/FULL	Normal		
	DIGITAL OUT	CODE					
		CLOCK		POSI, NEGA			
		RANGE		NORMAL, FULL			

MALLINCAM SIGNATURE SETTINGS					
Object Observed			Monitor		
Telescope/Aperture			Computer		
MENU		PLANETARY	LUNAR	SOLAR	DSO
1 OF 4	LUMINANCE MENU 1				
	ALC				
	AES				
	FIX SHUTTER				
	PEAK AVERAGE				
	BACK LIGHT				
	XDR				
	GAMMA				
2 OF 4	LUMINANCE MENU 2				
	AGC				
	SLOW SHUTTER				
	DNR				
	DAY/NIGHT				
	FOR REDUCTION				
	ECLIPSE				
	SHARPNESS				
	ENHANCE				
3 OF 4	COLOR MENU				
	COLOR MODE				
	WHITE BALANCE				
	UV MATRIX – V				
	UV MATRIX – H				
	COLOR GAIN				
	COLOR TONE R-Y				
	COLOR TONE B-Y				
4 OF 4	**SETUP MENU**				
	SPECIAL FUNCTION 1				
	PRIORITY				
	MOTION DETECT				
	DIGITAL ZOOM				
	H/V REVERSE				
	DISPLAY MODE				
	SPECIAL FUNCTION 2				
	PRIVACY MASK				
Telescope Accessories Etc.					
Filter(s)		Notes:			

MALLINCAM SIGNATURE SETTINGS					
Object Observed		Jupiter	Monitor		
Telescope/Aperture			Computer		
MENU		PLANETARY	LUNAR	SOLAR	DSO
1 OF 4	LUMINANCE MENU 1				
	ALC	OFF		OFF	
	AES	ON		0FF	
	FIX SHUTTER	OFF		1/180	
	PEAK AVERAGE	OFF		0FF	
	BACK LIGHT	OFF		0FF	
	XDR	OFF		0FF	
	GAMMA	0.45		1	
2 OF 4	LUMINANCE MENU 2				
	AGC	AUTO		FIX 8dB	
	SLOW SHUTTER	OFF		OFF	
	DNR	HIGH		OFF	
	DAY/NIGHT	DAY		DAY	
	FOR REDUCTION	OFF		OFF	
	ECLIPSE	OFF		OFF	
	SHARPNESS	ON		ON	
	ENHANCE	H+30 V+30			
3 OF 4	COLOR MENU				
	COLOR MODE	AUTO		ON	
	WHITE BALANCE	ATW		ATW	
	UV MATRIX – V	0-0-0		R-128,G-128,B+128	
	UV MATRIX – H	0-0-0		R-128,G-128,B+128	
	COLOR GAIN	0			
	COLOR TONE R-Y	0			
	COLOR TONE B-Y	0			
4 OF 4	**SETUP MENU**				
	SPECIAL FUNCTION 1				
	PRIORITY	AGC		AGC	
	MOTION DETECT	OFF		OFF	
	DIGITAL ZOOM	OFF		OFF	
	H/V REVERSE	OFF		OFF	
	DISPLAY MODE	720p50,4:3,NORMAL		720P50,4:3,NORMAL	
	SPECIAL FUNCTION 2				
	PRIVACY MASK	OFF			
Telescope Accessories Etc.					
Filter(s)		Notes:			

Appendix H – Notes